

to the growing sugar crop. From the 11th to 15th the stage of the river at Memphis, Tenn., was 33.9 feet, 0.9 foot above the danger-line. Large quantities of driftwood were reported in the Red River at Shreveport, La., from the 25th to 29th. Melting snow in the mountains in north-central New Mexico and south Colorado caused the Rio Grande Del Norte River

and other streams in that region to rise rapidly at the end of the month. At El Paso, Tex., the Rio Grande River was the highest ever known at that season of the year. High water was also reported in the Brazos River in Texas. Serious damage was reported in the Chaudiere Valley, Que., by a rise in the Chaudiere River on the 18th.

MISCELLANEOUS PHENOMENA.

☉ DROUGHT.

Very dry weather prevailed in the south Atlantic and east Gulf states. In west Maryland, and over a great part of North Carolina, the month was too dry for farming operations. In Mississippi cotton was injured, and in Louisiana all crops suffered from drought.

☉ FOREST FIRES.

At the close of the month fires were raging in the mountains near Cumberland, Md., and extensive forest fires prevailed near Blue Knob, Reading, and Ashland, Pa., and Egg Harbor City, May's Landing, and Tom's River, N. J. Extensive forest fires near East Hampton, Long Island, had been subdued.

☉ SUN SPOTS.

Haverford College Observatory, Pa. (observed by Prof. F. P. Leavenworth):

Date.	Number of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		Faculæ.	Remarks.
	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.		
April, 1891.										
5, 9 a. m. . . .	0	0	0	0	0	0	1	15	2	Definition fair; 1 large spot.
6, 10 a. m. . . .	0	0	0	0	0	0	1	1	1	Definition fair.
7, 10 a. m. . . .	1	4	0	0	0	0	2	6	2	Definition good; 1 large spot.
8, 12 m.	0	0	0	0	0	0	1	1	1	Definition good.
9, 12 m.	1	8	0	0	0	0	2	9	1	Definition fair.
12, 3 p. m. . . .	1	10	1	1	0	0	2	18	1	Definition fair.
13, 9 a. m. . . .	2	5	0	0	0	0	3	14	2	Definition fair.
14, 9 a. m. . . .	0	18	0	0	0	0	3	32	1	Definition good.
15, 9 a. m. . . .	0	9	0	0	0	0	3	37	2	Definition good.
16, 9 a. m. . . .	2	6	0	0	0	0	4	29	2	Definition poor.
17, 9 a. m. . . .	0	18	0	0	0	0	3	40	2	Definition good.
19, 9 a. m. . . .	1	2	0	0	0	0	5	32	3	Definition good.
20, 11 a. m. . . .	0	0	1	7	0	0	3	22	1	Definition poor.
21, 10 a. m. . . .	1	23	0	0	0	0	4	32	1	Definition good; 1 large spot.
22, 10 a. m. . . .	1	6	0	0	0	0	5	36	2	Definition good; 2 large spots.
23, 10 a. m. . . .	0	59	0	0	0	0	3	92	1	Definition fine; 1 large spot.
24, 10 a. m. . . .	0	0	0	0	0	0	3	62	1	Definition fair.
25, 10 a. m. . . .	0	0	0	6	0	0	3	41	3	Definition good.
26, 10 a. m. . . .	2	4	1	3	0	0	4	34	4	Definition fair.
27, 10 a. m. . . .	1	8	1	10	0	0	4	52	...	Definition fine; 2 large spots.
28, 9 a. m. . . .	0	11	0	0	0	0	4	58	1	Definition fine; 1 large spot.
29, 9 a. m. . . .	0	0	0	0	0	0	3	25	1	Definition fair.
30, 10 a. m. . . .	0	0	0	0	0	0	3	26	1	Definition fine.

Mr. D. E. Hadden, Alta, Iowa: 4th, 1 group, 4 spots; large spot with umbra and penumbra on meridian; faculæ by rotation on e. limb. 5th, 1 group, 2 spots. 6th, 1 group, 1 spot. 7th, 1 group, 1 spot; aurora in evening (area by rotation e. limb of faculæ of 12th of March). 8th, 1 group, 1 spot. 10th, 1 group, 12 spots; group s. latitude, about 1 day w. of meridian; group faculæ by rotation se. limb. 11th, 1 group, 8 spots; small group of faculæ by rotation e. limb. 12th, 1 group 6? spots; small group of faculæ by rotation se. limb. 14th, 1 group, 9 spots. 15th, 1 group, 10 spots; small group faculæ by rotation; faculæ on nw. and w. limbs disappearing by rotation. 16th, 1 group, 9 spots; faculæ by rotation e. limb. 17th, 2 groups, 14 spots; new group se. 18th, 2 groups, 8 spots?; group on nw. limb disappearing by rotation. 19th, 2 groups. 22d, 3 groups, 18 spots; new group 2 days in on e. limb in large area faculæ; 2 large spots, with umbra and penumbra; faculæ ne. by rotation 1 day in. 23d, 3 groups, 28 spots; large spot had "bridge" across it. 24th, 3 groups, 30 spots; a group disappearing by solar rotation w. 25th, 2 groups, 24 spots; group faculæ by rotation on e. limb; large group very elongated. 26th, 3 groups, 23 spots; new group near meridian, n. latitude; the umbra in large spot in group s. latitude had divided into 2 portions; group with faculæ on w. limb disappearing by rotation; large area faculæ on e. limb. 27th, 4 groups, 26 spots; faculæ by rotation on e. limb. 28th, 4 groups, 12 spots; large spot s. latitude; umbra again united. 30th, 2 groups, 6 spots.

Mr. John W. James, Riley, Ill.: 1st, 1 small spot 2 days w. of meridian in n. latitude; 1 small group 2 days w. of meridian in s. latitude. 4th to 8th and 10th, only the large spot of March 29th seen; this disappeared on w. edge, 10th. 10th, 1 new spot and 1 new group near sun's centre. 16th, 2 new groups 2 days from w. edge. 19th and 20th, none seen. 21st, 2 new spots on e. edge. 23d, 2 new groups 3 days from w. edge. 24th, immense areas of faculæ near w. limb; counted 30 spots in all. 26th, part of the group of the 21st formed into 1 large spot on sun's meridian, estimated 26,450 miles in diameter. 27th, 1 new group; 1 of its spots 13,000 miles in diameter; it formed in 21 hours 3 days from w. edge, and disappeared by solar rotation on the 30th, leaving only 1 large spot visible.

Mr. H. D. Gowey, North Lewisburgh, Ohio: sun spots were reported on the 1st, 5th, 7th, 8th, 12th, 16th, 17th, 21st, and 25th to 30th.

☉ ATMOSPHERIC ELECTRICITY.

☉ AURORAS.

Auroras were reported as follows: 1st, Bar Harbor and Eastport, Me.; Berlin Mills, N. H. 3d, Somerset, Mass. 6th, Sycamore, Ill.; Glasgow, Wis. 7th, Canton, Conn.; Oswego and Riley, Ill.; Alta, Cresco, Hopeville, and Stilson, Iowa; Caldwell, Lansing, Marquette, Rockland, and Rochester, Mich.; Choteau, Mont.; Hassan, Ohio; Eagle's Mere, Pa.; Webster, S. Dak.; Embarrass, Harvey, Hayward, Meadow Valley, and Medford, Wis. 8th, New Hartford and Southington, Conn.; Amherst, Cambridge, and Florida, Mass.; Detroit, Marquette, and Sault de Ste. Marie, Mich.; Ithaca, N. Y.; Eagle's Mere and Greenville, Pa.; Block Island, R. I.; Harvey, Wis. 9th, Eastport and Kent's Hill, Me.; Hassan, Ohio. 10th, Orono,

Me.; Hassan, Ohio. 11th, Hassan, Ohio; Glasgow, Harvey, and Hayward, Wis. 12th, Leicester, Mass.; Rochester and Sault de Ste. Marie, Mich.; Demos and Hassan, Ohio; Block Island, R. I. 13th, Berlin Mills, N. H.; Grampian Hills, Pa.; Wolsey, S. Dak. 15th, Webster City, Iowa. 18th, Amherst, Mass. 22d, Sandwich, Ill. 23d, Berlin Mills, N. H. 25th, Angola, Ind. 26th, Oregon, Mo. 27th, Greenville, Pa.; Medford, Wis. 28th, Voluntown, Conn.; Sycamore, Ill.; Eastport, Farmington, Kent's Hill, and Portland, Me.; Cambridge, Mass.; Hayward and Peshtigo, Wis. Sanborn, Iowa; Greenville, Pa. On the 7th, 8th, and 28th auroras were reported over the northern part of the country from New England to Wisconsin.

Detroit, Mich., 8th: a well-defined aurora extending over